

# The rare collembolan genus, *Temeritas* (Symphypleona: Sminthuridae), in southern Australia: systematics, distribution and conservation status

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## Abstract

A brief summary of the genus *Temeritas* is given with distributions of the four described Australian species and records of other species in the genus. A spelling correction is documented for the Western Australian species and a new name for the Victorian species is formally proposed here as the original name is preoccupied. Characters that distinguish *Temeritas* from allied genera are noted and the conservation status of the three southern species and Collembola in general are discussed. (*The Victorian Naturalist* 130 (1) 2013, 45–48)

**Keywords:** *Temeritas denisi*, *Temeritas regalis*, *Temeritas elegans*

## Introduction

The Collembola, common name Springtail, are a group of arthropods, little known because of their small size and cryptic habits. However, the class is abundant, widespread and species-rich with a high proportion of species endemic to Australia. Genera in some families include a high proportion of endemic species (short-range endemics), an example being the genus *Temeritas* Delamare Deboutteville and Mas-soud, 1963.

Species of *Temeritas* are easily recognised as they are globular, up to 2 mm long, usually brightly coloured with purple stripes and spots and slender antennae that are longer than the head and body combined (Figs 1, 2, 3).

The genus has a predominantly pantropical distribution although, exceptionally, some species in Australia and New Zealand are restricted to temperate climates. At present, 47 species are known in the genus, of which three have been described from Australia (Bellinger *et al.* 2012). The Australian species were described originally in the genus *Sminthurus* Latreille as *S. denisi* Womersley, 1934 from south-west Western Australia, *S. regalis* Womersley, 1939 from southern South Australia and *S. elegans* Womersley, 1939 from southern Victoria. These species are clearly allopatric. *Sminthurus denisi* was incorrectly named as *S. denisii* by Womersley (1934) but, in his subsequent publications



Fig. 1. Pen and ink drawing of *Temeritas regalis* (Womersley) by JM Betsch

(1936, 1939), he correctly changed the specific name to *S. denisi*. Womersley also recorded this species from New Zealand (Womersley 1936) but the record is unlikely and remains unconfirmed. Najt (1968) transferred two of the Australian species, *S. regalis* and *S. elegans*, to the genus *Temeritas*, but transposed their localities in her publication. Later, *S. denisi* was also transferred to *Temeritas* by Greenslade (1994).

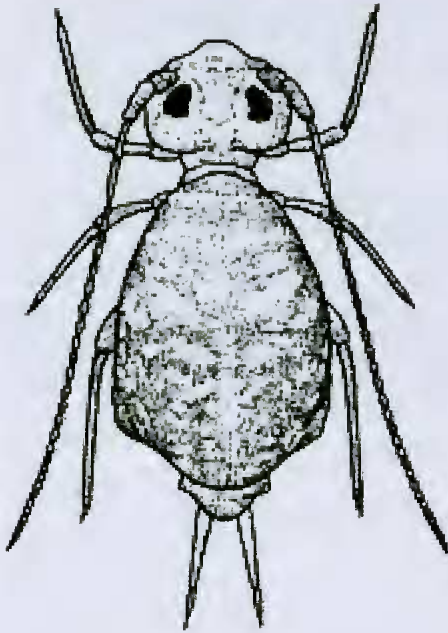


Fig 2. Line drawing of *Temeritas denisi* (Womersley) from Womersley (1939)



Fig. 3. Line drawing of *Temeritas isabellae* Greenslade from Womersley (1939)

### Distribution

A number of undescribed species have been collected from the northern regions of Western Australia, Northern Territory and Queensland including the Torres Strait Islands. The species from Murray Island, Torres Strait, has been identified as *Temeritas womersleyi* (Denis,

1948) originally described from Vietnam (P. Greenslade new record). Localities from where undescribed species have been collected in the last 20 years are Sweers Island, Kuranda, Woodstock and Lamington National Park in Queensland, McArthur River and Jabiru in the Northern Territory, New England National Park, Lord Howe Island and Norfolk Island in New South Wales, and Brookton and Barrow Island in Western Australia. The genus has not been collected from Tasmania.

### Systematics

Among the other genera of globular Collembola in Australia, *Temeritas* is distinct because of the relatively large size of species (nearly 2 mm long), their strongly annulated antennae that are longer than the body, and attractive colour patterns and bands (Fig. 1). Species of *Temeritas* can be distinguished from *Sminthurus*, in which genus Womersley (1934) first described the southern Australian species, by the lack of an internal spine on trochanter III and the shorter antennae. There is only one species of *Sminthurus* in Australia, the pest species *S. viridis* (L.). There are three other genera in Australia with which *Temeritas* might be confused but are distinct because of their long, strongly annulated antennae, often relatively large size and attractive colour patterns, particularly in the banded antennae (Fig. 4). The first of these is *Parropalites* Bonet and Tellez, new record, which is known only from rainforests in northern Queensland; but this genus is poorly characterised at present and it has much shorter antennae. The second genus with which *Temeritas* could be confused is *Pararrhopalites* Bonet and Tellez, new record. The third is *Sphyrotheca* Börner, another superficially similar genus but it has a neosminthuroid seta ventrolaterally on abdominal segment IV and also antennae that are shorter than the body.

### Nomenclature

As the original name of the Victorian *Sminthurus elegans* is preoccupied by *Sminthurus elegans* Fitch, 1863 from North America (now *Sminthurinus elegans*), even though the Australian species has been transferred to a different genus, a new name is required and it is renamed here as *Temeritas isabellae*.

**Table 1.** Total number of described species, endemic species and percentage of endemic species in each family of Collembola known from Australia

Higher taxon	Total described species	Number of endemic species	% endemic species
Arrhopalitidae	2	0	0
Bourletiellidae	24	16	66
Brachystomellidae	21	18	85
Cyphoderidae	4	2	50
Dicyrtomidae	4	3	75
Entomobryidae	76	33	50
Hypogastruridae	28	7	25
Isotomidae	53	23	44
Katiannidae	32	24	75
Neanuridae	46	36	78
Neelidae	3	0	0
Odontellidae	4	3	75
Oncopoduridae	1	1	100
Onychiuridae	5	0	0
Paronellidae	14	10	71
Sminthuridae	6	3	50
Sminthurididae	6	2	33
Spinothecidae	1	1	100
Tomoceridae	7	3	43
Tullbergiidae	17	8	47
Mean			53

### Conservation status

In spite of the high proportion of nationally endemic and locally endemic species, the conservation of only a few Collembola has been given attention. *Tasphorura vesiculata* Greenslade and Rusek (Tullbergiidae), occurs only in moss in a small patch of rainforest in north-east Tasmania, which has been given a low level of protection in that any future logging must consider protecting this species. Another is a species of *Australotomurus*, Stach (Entomobryidae: Orchesellinae) found in only four vegetation remnants in urban Perth. It was listed with the *Western Australian Wildlife Conservation Act* 1950 but delisted a few years later even though one of the remnants was partially alienated (P. Greenslade submitted). Some other genera of Collembola known to contain short range endemics are *Nasosminthurus* Stach (Bourle-

tiellidae), *Epimetrura* Schött (Entomobryidae) and *Folsomotoma* Bagnall (Isotomidae). The percentages of endemic compared with total species in each family known from Australia are given in Table 1. Total mean endemism is 53% and several of the larger families contain more than 70% endemic species (Brachystomellidae, Katiannidae, Neanuridae, Paronellidae) (Table 1). Many of these endemic species would be short range endemics.

All southern Australian species of *Temerita* are uncommon and patchy in distribution. Because their habitats include leaf litter, native grasses, moss and under logs in humid forests, they are likely to be susceptible to climate warming. Indeed, some populations may already have become locally extinct as a result of drought and competition from invasive exotic species as well as longer term climate



Fig. 4. Photograph of *Temeritas isabellae* from the Dandenong Ranges, Victoria.

change. For instance, *T. regalis* was collected relatively frequently in the southern Mt Lofty Ranges in the 1970s but has not been found in the last 20 years in localities where it was previously present. *Temeritas isabellae* was described originally from Kalorama, Mt Dandenong and there are also old records from Erskine River, Toolangi State Forest, Bellel Creek, Coranderk Reserve and Silverband Falls in the Grampians, all in Victoria. As with *T. regalis*, the Victorian species has not been collected in the last 30 years. A search in suitable localities and habitats should be undertaken as a priority, to establish its current conservation status.

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Received 28 June 2012; accepted 30 August 2012